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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/544,202
Filing Date: August 02, 2005
Appellant(s): MIMNAGH-KELLEHER ET AL.

Dicran Halajian
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/25/2008 appealing from the Office action mailed June 30, 2008 and Advisory Action September 30, 2008.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US 6,201,476	Depeursinge	3-2001
US 6,639,537	Raz	10-2003
EP 1,256,316	Damen	11-2002
US 5,983,722	Berther	11-1999
US 5,976,083	Richardson	11-1999
US 2002/0082079	Mantyjarvi et al.	6-2002

Bouten, "A triaxial accelerometer and portable data processing unit for the assessment of daily physical activity" IEEE Transactions on Biomedical Engineering Vol 44, No. 3, March 1997.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 5, 6 and 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Depeursinge et al. (US 6,201,476 B1 hereinafter referred to as Depeursinge).

Regarding claims 1 and 5, Depeursinge discloses a device/ergometer for determining a value that is representative of accelerations in at least two mutually perpendicular directions, (see Column 2, Lines 33-40), the device comprising a sensor system including at least two accelerometers (accelerometers 2a-2c) with which acceleration in the mutually perpendicular directions is convertible into electric signals while the value is determinable by signal processing means from an electric signal formed form the electric signals, (the signals from the accelerometer are fed through an A/D converter to a signal processor, see Column 2, lines 40-45 and Figure 1), wherein prior to the signal processing means electric signals from the at least two accelerometers are addable together by an adding element (the electric signals outputted by the accelerometers are capable of being added together to form a signal, analog signals are capable of being added together, for example by an adding element such as element 24, Figure 1 shows the accelerometer elements being added prior to the signal processing means just below 2c) to form an electric signal, wherein the

outputs of the at least two accelerometers are directly connected to the adding element to for the electric signal for processing by the signal processing means (adding element 24, Figure 1, which receives input analog signals to for an output analog signal which is sent thought a filter 25, A/D converter 26, and analyzer circuit 27, the accelerometers are directly connected to the adding element such that they are not remotely or wireless connected to the adding element). The Examiner Notes that as stated in the advisory office action element above 2c was agreed to not be an adding element forming a total current but the claims remained rejected under the cited alternative adding element 24, therefore element 5 has been removed from the above rejection).

Regarding claims 2 and 6, Depeursinge discloses the apparatus of claims 1 and 5 as set forth above, wherein in the adding element the connections conducting the electric signals are arranged in parallel (Figure 1 shows that in the adding element the connections conducting the signals from the sensor s are arranged in parallel).

Regarding claims 13 and 14, Depeursinge discloses the apparatus of claims 1 and 5 as set forth above, wherein the electrical signals added by the adding element are output currents of the at least two accelerometers added to form a total current for processing by the signal processing means (Depursinge discloses a device comprising three analog accelerometers 2a-2c which output individual voltage and current signals, which join at the junction prior to the analog/digital converter forming a total voltage/current signal, see Figure 1 and claims 1and 5 above).

Regarding claim 15 Depeursinge discloses a device for determining a value that is representative of accelerations in at least two mutually perpendicular directions (see

Column 2, Lines 33-40), the device comprising: a sensor system including at least two accelerometers (accelerometers 2a-2c) for providing output currents; an adder directly connected to the at least two accelerometers (junction shown in Figure 1 between the accelerometers and A/D converter 5 and 24 see claim 1 above) for directly receiving the output currents and forming a total *current;* and a processor configured to receive the total current for processing (the A/D converter 5 receives the total current and forwards the signal to the processor 6, see claims 1 and 5 above).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-2, 5, 6, 10 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Damen et al. (EP 1,256,316 A1 hereinafter referred to as Damen) in

view of Carlijn V. C. Bouten et al. "*A Triaxial Accelerometer and Portable Data Processing Unit for the Assessment of Daily Physical Activity,*" IEEE Transaction of Biomedical Engineering, Vol. 44, No. 3, March 1997 (hereinafter referred to as Bouten).

Regarding Claims 1 and 5:

Damen discloses an ergometer for measuring a value that is representative of a physical effort of an individual, the ergometer comprising a device that includes a sensor system including at least two accelerometers (a system with three accelerometers) with which the acceleration in each of the directions is convertible into electric signals (the sensor generates an analogue signal, see [0022]), while the value is determinable by signal processing means from an electric signal from the from the electric signals (A/D converter 16, micro-processor 17), wherein prior to the signal processing means electric signals from the at least two accelerometers are addable together by an adding element to form an electric signal (Figure 3 shows an adding element between the amplifiers 15 and signal processing means), wherein outputs of the at least two accelerometers are directly connected to the adding element to form the electric signal for processing by the signal processing means (as best seen in Figure 3 Damen shows a device wherein the acceleration sensors are dejectedly connected via an adding element junction such that acceleration sensors are not remotely, or wireless connected to the device). Damen fails to teach where the acceleration sensors measure acceleration in each of a mutually perpendicular direction. Bouten teaches an ergometer with a triaxial accelerometer mounted orthogonally which measures acceleration in at least two mutually perpendicular directions (see Page138, Section D).

Both Damen and Bouten teach ergometers. Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the device taught by Damen by mounting the accelerometers orthogonally with independent measurement directions as taught by Bouten in order to provide the best prediction of energy expenditure, see Bouten Page 136, Column 2, Paragraph 2.

Regarding claims 15, Damen teaches a device for determining a value that is representative of accelerations (see Column 2, Lines 33-40), the device comprising: a sensor system including at least two accelerometers (accelerometers see Figure 3) for providing output currents; an adder directly connected to the at least two accelerometers (junction shown in Figure 3 between the accelerometers and A/D converter 16 is directly connected to the accelerometers through the amplifiers) for directly receiving the output currents and forming a total *current;* and a processor configured to receive the total current for processing (the A/D converter 16 receives the total current and forwards the signal to the processor 17). Damen fails to teach where the acceleration sensors measure acceleration in each of a mutually perpendicular direction. Bouten teaches an ergometer with a triaxial accelerometer mounted orthogonally which measures acceleration in at least two mutually perpendicular directions (see Page138, Section D).

Both Damen and Bouten teach ergometers. Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the device taught by Damen by mounting the accelerometers orthogonally with independent

measurement directions as taught by Bouten in order to provide the best prediction of energy expenditure, see Bouten Page 136, Column 2, Paragraph 2.

Regarding claims 13 and 14, Damen teaches the device as set forth above, wherein the electrical signals added by the adding element are output currents of the at least two accelerometers added to form a total current for processing by the signal processing means (Damen teaches a device comprising three analog accelerometers which output individual voltage and current signals, which join at the junction prior to the analog/digital converter forming a total voltage/current signal, see Figure 3).

Regarding claims 2 and 6, Damen teaches the device of claims 1 and 5 as set forth above, wherein in the adding element the connections conducting the electrical signals are arranged in parallel, (Damen Figure 3 shows the connections conducting the signals are arranged in parallel).

Regarding claim 10, Damen teaches the ergometer of claim 5 as set forth above, wherein the ergometer comprises a coupling to which a computer can be connected (the device can dock with a computer by a link, see Damen [0017]), for transferring stored data from the ergometer to the computer.

7. Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Damen et al. (EP 1,256,316 A1 hereinafter referred to as Damen) in view of Carlijn V. C. Bouten et al. (as cited above hereinafter referred to as Bouten) as applied to claims 1 and 5 above, and further in view of Raz (US 6,639,537 B1 hereinafter referred to as Raz).

Damen in view of Bouten teaches the device of claims 1 and 5 as set forth above. Furthermore, Damen teaches that the signal processing means comprise a processor, (see Damen Figure 3) and that the acceleration sensors of Bouten include a band pass filter (Bouten teaches the use of sequential high pass and low pass filters, which is well recognized in the art as an equivalent to a band pass filter) and analog to digital conversion circuit. Damen fails to teach the device wherein the processing means comprises a signal amplifier. Raz teaches analog-to-digital conversion system (ADC) comprising of an analog front-end low noise amplifier, see Figure 4 and Column 4, Lines 43-55.

Both Damen in view of Bouten and Raz teach analog to digital conversion circuits. Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the device taught by Damen to include a low noise amplifier as taught by Raz in order to provide appropriate conditioning of the analog input signal, see Raz Column 4, Lines 43-55.

8. Claims 3 and 11are rejected under 35 U.S.C. 103(a) as being unpatentable over Damen et al. (EP 1,256,316 A1 hereinafter referred to as Damen) in view of Carlijn V. C. Bouten et al. (as cited above hereinafter referred to as Bouten) as applied to claims 1 and 5 above, and further in view of Berther et al. (US 5,983,722 hereinafter referred to as Berther).

Damen in view of Bouten teaches the device of claims 1 and 5 above, wherein a sensor system comprises at least a sensor which comprises a piezoelectric material.

Damen fail to explicitly teach the device wherein the piezoelectric material is flexible. Piezoelectric materials produce an electric charge when deformed. In piezoelectric accelerometers this is typically done when a proof mass attached to a substrate causes the piezoelectric material to bend as evidence by Berther. Berther teaches a uniaxial accelerometer wherein the sensor comprises a flexible piezoelectric material (piezoelectric bender element, see Abstract).

Damen, Bouten and Berther teach accelerometers. Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention to substitute the uniaxial in the device taught by Damen and Bouten for the accelerometer taught by Berther in order to achieve a sensor comprising a flexible piezoelectric material.

9. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Damen et al. (EP 1,256,316 A1 hereinafter referred to as Damen) in view of Carlijn V. C. Bouten et al. (as cited above hereinafter referred to as Bouten) as applied to claim 5 above, and further in view of Richardson et a. (US 5,976,083 hereinafter referred to as Richardson).

Regarding claim 7, Damen in view of Bouten teaches the device of claim 5 as set forth above, wherein the value is correlated to an energy value (Bouten teaches a correlation between the acceleration value and an energy value, See Page 141 Section IV and Page 137, Column 1, and Damen teaches a device wherein the input is used to calculate the PAI which is correlated to an energy value i.e. the total energy expenditure

and basal metabolic rate, see [0006] and [0010]). Damen fails to teach the device wherein the ergometer comprises a database in which the value correlates to a nutritional value (calories). Richardson teaches an activity monitoring device comprising a system which monitors locomotion and hart rate information which is translated into useful information (calories burned/nutritional value) and stored in a database see Column 16, Line 55 thru Column 17, Line 4.

Both Damen in view of Bouten and Richardson teach activity monitoring devices. Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the device taught by Damen in view of Bouten to include a database in which the value is correlated to a nutritional value of energy expenditure as taught by Richardson in order to provide useful information to the user, see Column 16, Line 55 thru Column 17, Line 4.

Regarding claim 8, Damen in view of Bouten and Richardson teaches the Ergometer as claimed in claim 7 as set forth above, wherein the ergometer comprises a memory (memory 18, see Damen Figure 3) in which energy values can be stored over a certain period of time (the processor 17 stores the calculated PAI's in a memory, see Figure [0024]).

Regarding claim 9, Damen in view of Bouten and Richardson teaches the Ergometer as claimed in claim 7 as set forth above, wherein the ergometer comprises a screen (LCD 3, see Damen [0028]) on which the instantaneous effort and/or average effort can be displayed in energy values over a certain period (features the PAI averaged over time or more selectable periods, see [0028]).

10. Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Depeursinge et al. (US 6,201,476 B1 hereinafter referred to as Depeursinge) in view of Mantyjarvi et al. (US 2002/0082079 A1 hereinafter referred to as Mantyjarvi).

Depeursinge teaches the device of claims 1 and 5 as set forth above wherein the signal processing means comprises a processor 6 and a transmitting means 20 to activate an alarm. Depeursinge fails to teach the device wherein the processing means comprises a signal amplifier, a bandpass filter and a processor. Mantyjarvi teaches a accelerometer system comprising controller having DSP processor and a transmitter, (see Figure 2, [0022] and[0023]), comprising a processing means having a transmitter 202 that amplifies the modulated signal to the antenna (amplifier) and a D/A converter that filters the frequency outside the desired frequency band in the receiver (band pass filter).

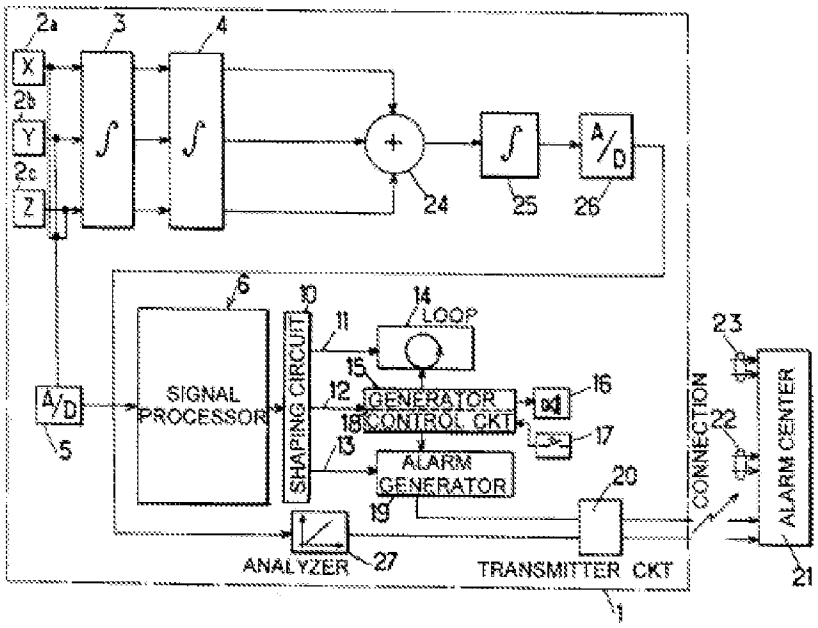
Both Depeursinge and Mantyjarvi teach acceleration sensor systems having transmitters. Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the device taught by Depeursinge to include the transceiver system comprising a band pass filter and signal amplifier as taught by Mantyjarvi in order to amplify a signal from an alarm center providing feedback to the patient and limit the transmission signal from the unit in a band limited system, see Mantyjarvi [0023].

(10) Response to Argument

Regarding claims 1, 5, and 15 the Applicant argues that the Depeursinge et al. (US 6,201,476 B1 hereinafter referred to as Depeursinge) or Damen et al. (EP 1,256,316 A1 hereinafter referred to as Damen) fails to teach a device wherein the accelerometers are directly connected to an adding element which forms a total current.

The Examiner Disagrees.

Depeursinge teaches the adding element 24 in Figure 1, which is directly connected to the outputs of accelerometers, 2a, 2b, and 2c, the adding element 24 receives input analog signals to form an output analog signal, which comprises a total voltage and current, which is sent thought a filter 25, A/D converter 26, and analyzer circuit 27. During examination, the claims are given the broadest reasonable interpretation, see MPEP 904.01. For example, a direct electrical connection refers to a physical connection (direct connection vs. a wireless or remote connection). Depeursinge teaches the adding element 24 shown as a summing element in Figure 1, see also Column 4, Lines 35-50, which comprises 3 analog signal inputs and 1 analog output, wherein analog signals comprise a voltage and current component. The summing device 24 sums each of the analog inputs to produce an output the output comprising a total current.



Damen teaches the device comprising an adding element, in the form of the junction, directly connected to the acceleration sensors; see Figure 3 which is a circuit diagram for the device. Similar to the reasons stated above, Damen teaches the junction being directly connected to the outputs of the respective acceleration sensors. The junction shown in Figure 3, comprises three analog signal inputs and a single output sent to an A/D converter, wherein the combination of analog signals into a single output results in a total signal having a total current.

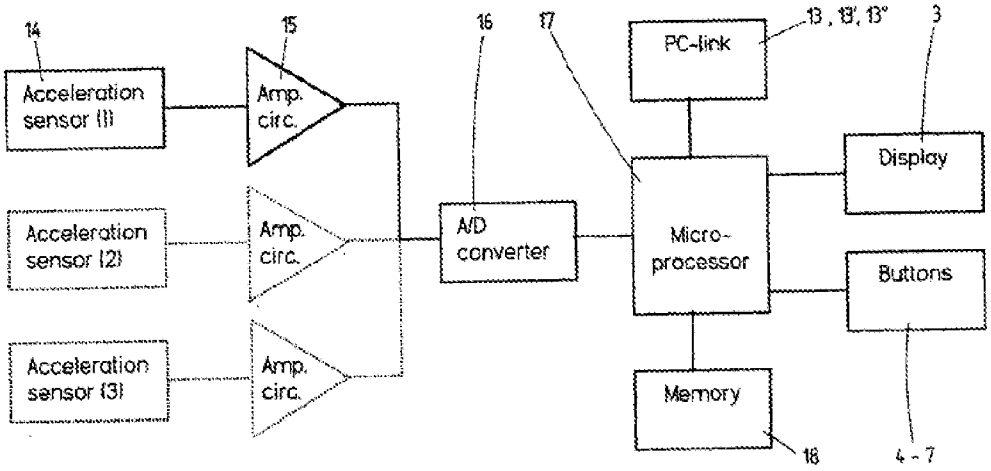


fig.3

The Applicant's argument that the sensors in Depeursinge and Damen are not directly connected relies on a narrow interpretation of directly connected as shown in Figure 1 of the instant specification. Furthermore, the sensor components in Damen could be considered to be a combination of elements 14 and 15, thereby providing three sensors directly connected to the junction, as narrowly interpreted.

The Applicants remaining arguments regarding claims 4, 12, 3, 11, 13, 14 and 7-9 are directed towards claims 1, 5 and 15 which are addressed above.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Michael C Stout/

Examiner, Art Unit 3736

Conferees:

/Max Hindenburg/

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